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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,230	12/12/2003	Tuong Luoh	MIC920088	9461

7590 02/18/2005

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EXAMINER

NHU, DAVID

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 02/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/733,230

Applicant(s)

LUOH ET AL.

Examiner

David Nhu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTIONS

Claims Objection

1. Claims 1, 9, "a grain size of about 50-300 Å" should be –a grain size of about 50 Å- 300 Å –
Claims 14, 20, "about 200-500 Å" should be –about 200 Å-500 Å--
Claim 12, "about 200-600 Å" should be –about 200 Å-600 Å--
Claim 9, "**the** memory cell" lacks a clear antecedent basis.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-20 are rejected under 35 U.S.C. 102 (b) as being anticipated by Forbes (6,166,401).

Regarding claims 1, 9, Forbes, (see figures 1, 2, 3, col. 2, lines 64-67, col. 3, lines 1-67, col. 4, lines 1-61), teaches a method of forming a semiconductor device, comprising: providing a semiconductor substrate 306 (see figure 3); forming a first insulating layer 316 over the semiconductor substrate; forming a floating gate 310 over the first insulating layer with a reaction gas/plasma, wherein the floating gate comprises a microcrystalline material (see col. 4, lines 40-45, col. 6, lines 54-57) having a grain size of about 30 Angstroms to 100 Angstroms; forming a second insulating layer 312 over the floating gate; and forming a control gate 314 over the second insulating layer.

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Regarding claims 2-12, Forbes, (see col. 1-10, figures 1-5), also teaches the first and second insulating layers 316, 312 comprise oxide, nitride, the floating gate *310 is formed with the reaction gas/plasma PECVD; forming a plurality of bit lines in the semiconductor substrate.*

Regarding claim 13, Forbes, (see figures 1-4, col. 2, lines 64-67, col. 3, lines 1-67, col. 4, lines 1-61), teaches a method of forming a semiconductor device, comprising: providing a silicon substrate 306; selective doping of the silicon substrate to form a plurality of bit lines 302, 304 in the silicon substrate; forming a first insulating layer 316 over the silicon substrate; forming a floating gate 310 over the first insulating layer, wherein the floating gate comprises an amorphous material (see col. 4, lines 40-53); thermally treating a memory cell 300 to transform the amorphous material into a microcrystalline material (microcrystalline polysilicon/microcrystalline silicon carbide); forming a second insulating layer 312 over the floating gate; forming a control gate 314 over the second insulating layer.

Regarding claim 14-18, Forbes, (see col. 1-10, figures 1-5), also teaches the first and second insulating layers 316, 312 comprise oxide, nitride, the floating gate *310 is formed with the reaction gas/plasma PECVD; forming a plurality of bit lines in the semiconductor substrate.*

Conclusion


4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Forbes'797, Forbes'401, Forbes'907, are cited as of interest.
5. A shortened statutory period for response to this action is set to expired 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see 710.02 (b)).

6 Any inquiry concerning this communication on earlier communications from the examiner should be directed to David Nhu, (571)272-1792. The examiner can normally be reached on Monday-Friday from 7:30 AM to 5:00 PM. The examiner's supervisor, David Nelms can be reached on (571)272-1787.

The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Information regarding the status of an application may be obtained from the patent application information retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Nhu 



February 14, 2005